

REPLACED BY  
ART 34 AMDT

FUNCTIONAL INSERT FOR THE NECK OF A RECEPTACLE, TYPICALLY  
A BOTTLE, AND CLOSING CAP COMPRISING THE SAID INSERT

Field of the invention

The invention relates to the domain of functional inserts to be placed inside receptacle necks in order to provide the said receptacle with a particular function, namely typically a pouring spout function or a non-  
5 fillability function.

The invention also relates to closing caps comprising this type of insert.

State of the art

10 Many functional inserts are already known that can be placed in receptacle necks and typically perform a pouring spout function, or non-fillability function, or possibly other functions.

Closing caps provided with sealing inserts are also  
15 known, and these caps may also include other functional inserts due to a reversible assembly so that the functional insert can be placed in the bottle neck at the same time that the closing cap can be placed on the neck.

Thus, French application No. 99 14016 in the name of  
20 the applicant divulges a closing cap comprising a functional insert that forms a pouring spout.

Similarly, French application No. 00 00397 in the name of the applicant divulges a closing cap comprising a functional insert with a non-filling function.

Problems that arise

Functional inserts according to the state of the art generally comprise circular ribs that provide a leak tight attachment of inserts in the neck, by virtue of  
5 their flexibility.

Functional inserts may be attached by force fitting the insert into the neck, which does not cause a problem when the functional insert is fixed separately and when it is adapted to a predetermined neck, and particularly  
10 when the neck has a "A" profile, in other words a significant narrowing in the axial direction from bottom to top, such that once the insert is force fitted into the neck, it cannot easily come out again.

However, attachment of the inserts causes problems  
15 when the neck has a "V" profile, in other words with the significant increase in diameter in the axial direction from the bottom to the top, such that there is a risk that the insert could come out of the neck once it has been placed inside it.

20 This risk is particularly significant if the necks have dimensional irregularities and if the functional insert is fixed to the neck at the same time as the closing cap. In this case, standard capping equipment is used and therefore capping does not include any specific  
25 force fitting step during assembly of the functional insert into the neck.

Therefore, the invention is designed to give good attachment of the functional insert to a neck, regardless of the neck profile, if it is a "A" or a "V" or if it is

straight, also with larger tolerances on the inside dimensions of the necks, even when the functional insert is associated with a closing cap and is fixed to the neck when the cap is fitted on the neck as if the closing cap  
5 does not include a functional insert.

#### Description of the invention

According, to the invention, the typically plastic functional insert for the typically glass bottle neck,  
10 comprises a body that will be inserted in the said neck, the said body being provided with at least one flexible rib on its outer surface that will form a leak tight junction with the said neck when the said functional insert is inserted in the said neck, and a functional  
15 element, and is characterized in that:

a) the said functional insert comprises an adhesive typically supported on the said rib on its upper surface and / or supported on the said outer surface of the said body, the said adhesive being chosen to stick to  
20 the said neck,

b) the said adhesive is a typically permanent adhesive, chosen with the consistency or viscosity such that it only creeps under stress, the stress typically corresponding to compression of the said adhesive between  
25 the said rib and the said body when the said functional insert has already been inserted into the said neck, and the said rib folds, the content and quantity of the said adhesive being chosen such that when it comes into contact with the said neck, it fixes the said body to the

said neck by an adhesive contact zone and prevents upwards axial displacement of the said functional insert under an axial stress.

The invention is based on a combination of several  
5 means:

- firstly, use of an adhesive with rheology chosen such that there is no creep in the absence of a mechanical stress, so that there is no unwanted running of the adhesive that would be unacceptable in all  
10 respects,

- secondly, positioning of this adhesive, typically on a rib or at the bottom of the annular cavity included between two ribs and the outer surface of the body of the insert, such that it is not accessible during  
15 storage or manipulation of the inserts,

- also, the lack of contact between the adhesive and the contents of the bottle: since the lower rib on which this adhesive is located is or can be a sealing rib, the adhesive will not come into contact with the  
20 contents of the bottle,

- finally, on invisible application of this adhesive: the action of positioning the insert in the neck (in the normal manner) triggers bending of the ribs upwards and consequently the necessary creep of the  
25 adhesive towards the neck.

The applicant has observed that with the means according to the invention, it is possible to considerably improve the resistance of functional inserts

CLAIMS

1. Functional insert (3), typically made of plastic, for a typically glass or plastic bottle neck (4), comprising a body (30) designed to be inserted in the said neck, the said body (30) being provided with at least one flexible rib (31) on its outer surface designed to form a leak tight junction with the said neck (4) when the said functional insert is inserted in the said neck, and a functional element (6, 7), characterized in that:

a) the said functional insert (3) comprises an adhesive (5) typically supported on the said rib (31) on its upper surface and / or supported on the said outer surface of the said body, the said adhesive (5) being chosen to stick to the said neck (4),

b) the said adhesive (5) is a typically permanent adhesive, chosen with a consistency or viscosity such that it only creeps under stress, the stress typically corresponding to compression of the said adhesive between the said rib (31) and the said body (30) when the said functional insert has already been inserted into the said neck, and the said rib folds, the content and quantity of the said adhesive (5) being chosen such that when it comes into contact with the said neck, it fixes the said body to the said neck by an adhesive contact zone and prevents upwards axial displacement of the said functional insert (3) under an axial stress.

2. Insert according to claim 1, in which the said body (30), typically cylindrical, comprises at least two

ribs (31), the said adhesive (5) typically being placed between the two ribs, or on each rib.

3. Insert as claimed in any of claims 1 to 2, in which the said adhesive (5) forms a ring, so as to create  
5 a circular contact area.

4. Insert as claimed in either of claims 1 to 2, in which the said adhesive (5) forms one or several discontinuous deposits so as to form a discontinuous or continuous contact area depending on the number of the  
10 said discontinuous deposits, typically between 1 and 4.

5. Insert as claimed in any of claims 1 to 4, in which the said adhesive (5) is a permanent "hot-melt" type adhesive.

6. Insert as claimed in any of claims 1 to 4, in  
15 which the said adhesive (5) can be activated or cross-linked, typically by the input of energy, once the said insert has been placed in the said neck.

7. Insert according to claim 6, in which the adhesive includes a setting agent or activator.

20 8. Insert as claimed in any of claims 1 to 4, in which the said adhesive (5) is typically in the form of micro-balls that release the said adhesive when the said functional insert is placed in the said neck, or is an adhesive that can be activated when the said functional  
25 insert is placed in the said neck.

9. Insert as claimed in any of claims 1 to 8, in which the said adhesive (5) is selected to typically bond to glass, and in which the contact area of the said adhesive contact area is typically between 20 and